IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:	
Robert M. Japp et al.	
Serial No.: 09/625,135	Art Unit: 3729
Filed: July 25, 2000	Examiner: Anthony D. Tubang.
For: Composite Laminate Circuit Structure and Methods of Fabricating	Atty Docket: END919990082US1

APPELLANT'S SUPPLEMENTAL BRIEF

Attention: Board of Patent Appeals and Interferences
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is an appeal from the Primary Examiner's final rejection of claims 8-17 and in response to the Notification of Non-Compliance with 37 CFR 1.192(c) dated June 24, 2004.

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is the assignee of the application, International Business Machines Corporation

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellant, Appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1-17 are in the application. Claims 8-17 are finally rejected and are on appeal. Claims 1-7 are directed to a non-elected invention and have been withdrawn.

IV. STATUS OF AMENDMENTS

No amendment has been filed after final rejection.

V. SUMMARY OF INVENTION

The present invention relates to methods for fabricating laminate circuit structures, and more particularly to fabricating composite laminate circuit structures constructed from a plurality of modularized circuitized voltage plane subassemblies bonded together. The present invention provides for planar, fine line external circuit flat lines and does not require an additional adhesive sheet or glass cloth reinforcement (page 1, lines 6–14 of the specification and figure 3).

The present invention makes possible thinner laminate circuit structures, and therefore making possible higher density PCBs with fewer processing steps. The subject invention teaches new ways to form 2S1P (figure 1) and 0S1P (figure 2) components using novel methods, some of which also simplify or solve problems of how to adhere these components together into a composite, in some cases without the corresponding increase in composite thickness necessitated by the prior art (page 2, line 30 to page 3, line 2 of the specification).

The present invention improves and simplifies the process for customizing the power planes as well as opening up numerous new possibilities in methods to construct the component cores (page 3, lines 5–7 of the specification). The present invention comprises novel ways for adhering together the subassemblies (page 3, lines 8–9 of the specification, figures 4 and 5).

More particularly, claim 8 relates to a method for fabricating a laminate circuit structure assembly (page 4, lines 12– 13 of the specification and figure 3).

The method comprises providing at least two modularized circuitized voltage plane subassemblies wherein each of the subassemblies comprise at least two signal planes disposed about an internal voltage plane (page 4, lines 13–15 and page 17, lines 27-29 of the specification and figure 1).

The signal planes each have an external surface and an internal surface (page 4, lines 15–16 of the specification and figure 1).

Dielectric material is located between the signal and voltage planes (page 4, lines 16–17 and page 17, lines 27-29 of the specification and figure 1) and also on each external surface of each signal plane (page 4, line 19 and page 17, line 29 of the specification and figure 1).

An uncured or partially cured curable dielectric composition is located between the subassemblies (page 4, lines 20–21 of the specification). The dielectric composition comprises the same dielectric used in the subassemblies (page 3, lines 29–30 of the specification).

Optionally, an interposer can be located between the subassemblies wherein the interposer comprises dielectric layers that are disposed about an internal electrically conductive layer (page 4, lines 26–28 of the specification). The subassemblies are aligned and laminated to cause bonding of the subassemblies (page 4, lines 29–30 of the specification and figure 4).

Claim 9 further recites locating an interposer between the subassemblies wherein the interposer comprises dielectric layers disposed about an internal electrically conductive layer (page 4, lines 26–28 of the specification). Claim 10 further recites that the dielectric of at least one of the surfaces that is to be bonded is from said dielectric composition (page 20 and original claim 10). Claim 11 further recites that vias are disposed within each subassembly for providing electrical communication between signal planes and electrical connection to another subassembly (page 7, line 30, page 9, line 12, page 17, lines 29 and 30 and figures 1 and 3). Claim 12 further recites that the vias through the signal planes are plated with a conductive metal page 7, lines 30 and 31, page 17, lines 30 and 31 and figure 1). Claim 13 further recites that the vias are filled with conductive adhesive (page 17, lines 30 and 31 and figure 1). Claim 14 further recites that the internal electricity conductive layer of the interposer is copper (page 21, original claim 14). Claim 15 further recites that the interposer is about 3 to about 10 mils thick (page 21, original claim 15). Claim 16 further recites providing top and bottom circuit layers on top and bottom external surfaces of the assembly(page 21, original claim 16 and figure 3). Claim 17 further recites that the laminating is carried out at about 100 to about 200°C, for about 15 minutes to about 90 minutes, and at a pressure of about 100 to about 500 psi (page 17, lines 13-15, page 21, original claim 17).

VI. ISSUES

A. Has the examiner established that Claims 8, 11-13 and 16 are anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 4,868,350 to Hoffarth, et al.?

B. Has the examiner established that Claims 9, 10, 14 and 15 are obvious and therefore unpatentable under 35 USC 103(a) over Hoffarth et al. in view of U.S. Patent 4,755,911 to Suzuki?

C. Has the examiner established that Claim 17 is obvious and therefore unpatentable under 35 U.S.C. § 103 (a) over Hoffarth in view of U.S. Patent No. 4,788,766 to Burger, et al.?

VII. GROUPING OF CLAIMS

For each rejection of the claims, the involved claims stand or fall together.

VIII. ARGUMENTS

A. U.S. Patent No. 4,868,350 to Hoffarth, et al. fails to anticipate Claims 8, 11-13 and 16

Claims 8, 11-13 and 16 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,868,350 to Hoffarth, et al. (hereinafter also "Hoffarth"). Hoffarth fails to anticipate Claims 8, 11-13 and 16.

By way of background as discussed in the spercificaiton, a conventional technique of forming a laminate circuit board structures includes forming layers of dielectric material and electrically conducting material to provide multiple layers of circuits and voltage planes. Voltage planes can be either ground plane or power planes, and are sometimes collectively referred to as power planes (page 1, lines 16–20 of the specification).

Composites constructed using 2S1P building blocks offer a number of advantages over conventional construction techniques. One of these advantages is testable impedance prior to composite lamination. The impedance is also predominately controlled by the core dielectric. This is a major advantage as core layer dielectrics are not effected by the complex geometries and fill requirements that occur at composite lamination. 2S1P's built with glass cloth free materials facilitate very high circuit density by allowing very small, laser drilled holes to be made. One very important aspect of using 2S1P's to build high density composite printed circuit

boards (PCBs) is the method used to adhere the 2S1P's into a composite board(page 2, line 29–page 3, line 3 of the specification).

Prior methods of making 2S1P cores involve drilling or etching clearance holes in bare sheets, e.g., 2 oz., 1 oz. and/or .5 oz., copper and then laminating and fully curing these with conventional prepregs or coated foils to produce a core that could be circuitized forming the signal planes. Likewise, prior 0S1P's have been fabricated in similar manners. These methods are difficult to practice due to the problems associated with handling bare copper. 2S1P's can also be made by circuitizing one side of a core with the power pattern then relaminating additional prepreg or coated copper over the circuitized power pattern(page 3, lines 4–11 of the specification).

Regardless of the method used to make the 2S1P cores, they must now be stuck together using additional "sticker" materials placed between the 2S1P's and the 0S1P's. These additional sticker sheets contribute additional thickness and exacerbate all the problems associated with additional thickness (page 3, lines 12–15 of the specification).

More recently, techniques have been provided that provide a relatively inexpensive photolithographic technique of forming a composite laminate structure from individual discrete laminate structures into a composite laminate structure (page 3, lines 16–18 of the specification).

The present invention, as discussed above, provides an improved process.

Hoffarth fails to anticipate Claims 8, 11-13 and 16 since, among other things, Hoffarth does not suggest employing a dielectric composition between the sub-assemblies that is of the same material as the dielectric of the sub-assemblies. Hoffarth merely suggests employing low dielectric constant material for sub-assemblies and low dielectric material for the encapsulant binding layer, but does not disclose that such should be of the same material. The dielectric material of the subassemblies of Hoffarth is shown as sheets 12 and 12b. The other dielectric material employed in Hoffarth is that used for the encapsulant binding layer and dielectric between cores as shown in figure 4. However, neither of these dielectric materials are disclosed as necessarily being the same as the dielectric of the subassemblies as required by the present invention. Moreover, Hoffarth does not explicitly state that the encapsulant 11 should even be

the same as the material between subassemblies. In fact, the material of the sub-assemblies is preferably polytetrafluoroethylene (e.g., see Column 4, lines 10-11, Claims 10 and 15), and the encapsulant is preferably epoxy or chlorotrifluoroethylene (e.g., see Column 3, Lines 47-51; Col. 4, lines 27-30). The material mentioned for that between subassemblies is epoxy or chlorotrifluoroethylene.

Moreover, the bonding layers and dielectric of the subassemblies are selected to differ since the binding is to space the dielectric from the conductive surfaces.

Furthermore, Hoffarth does not disclose the step of providing subassemblies having dielectric on each external surface of each signal plane prior to providing a dielectric composition for the laminating as required by the present claims. Hoffarth merely shows subassemblies having signal planes 19 on the encapsulant. The subassemblies or cores are then laminated together with the material for the laminating directly contacting the signal plane.

Therefore, Hoffarth fails to anticipate the above claims. In particular, anticipation requires the disclosure, in a prior art reference, of each and every recitation as set forth in the claims. *See Titanium Metals Corp. v. Banner*, 227 USPQ 773 (Fed. Cir. 1985), *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, USPQ2d 1081 (Fed. Cir. 1986), and *Akzo N.V. v. U.S. Interntional Trade Commissioner*, 1 USPQ2d 1241 (Fed. Cir. 1986).

There must be no difference between the claimed invention and reference disclosure for an anticipation rejection under 35 U.S.C. 102. *See Scripps Clinic and Research Foundation v. Genetech, Inc.*, 18 USPQ2d 1001 (CAFC 1991) and *Studiengesellschaft Kohle GmbH v. Dart Industries*, 220 USPQ 841 (CAFC 1984).

The law is well settled that claiming of a more specific range within a more generic range and/or claiming species from a broader group of possible compounds avoids a lack of novelty rejection. The test for anticipation is whether the claims read on the prior art disclosure, not on what the reference broadly teach.

For example, see *Akzo v. U.S. International Trade Commissioner*, 1 USPQ2d 241 (Fed. Cir. 1986). In Akzo, the claims that were drawn to a process for making aramid fibers using a

98% sulfuric acid were not anticipated by a reference using a concentrated sulfuric acid solution. The disclosure of a concentrated sulfuric acid was not deemed an inherent disclosure of the more specific 98% sulfuric acid.

The court further found that no anticipation exists when one would have had to "randomly pick and choose among a number of different polyamides, a plurality of solvents and a range of inherent viscosities" to reach the claimed invention.

Also see *In re* Kollman, et al. 201 USPQ 193 (CCPA-1979) wherein the court held that the prior art generic disclosure contains "no suggestion of the required FENAC/diphenyl ether ratio."

In Rem-Cru Titanium v. Watson 112 USPQ 88 (D.D.C-1956), the prior art showed alloys having broad ranges which included the claimed ranges. However, the prior art did not explicitly disclose the more limited ranges or alloys having the characteristics of the claimed alloy, which is analogous to the present case. Accordingly, the court held the claims to be allowable. For a similar factual pattern and same holding, please see *Becket v. Coe (CA, DC 1938) 38* USPQ2d *and Tarak v Watson (*DC-DC 1954) 103 USPQ 78.

Also, see *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Ortho-Peadics, Inc.* 24 USPQ2d 1321 (Fed. Cir. 1992). Here the court held that although the claims may be subsumed in a prior art reference generalized disclosure, this is not literal identity. The reference ranges were "so broad as to be meaningless" and provided no guidelines on how to construct a product with the invention's attributes.

Furthermore, the cited references do not inherently disclose the present invention. For instance, see *In re Robertson, et al* 49 USPQ2d 1949 (1999 Fed. Cir.). In this case, Robertson filed a patent application concerning a paper diaper. The application claimed a paper diaper having (a) two fasteners so that the diaper could be worn on a baby and (b) a third fastener for rolling up and fixing the used diaper. The Patent Office rejected the invention under 35 USC 102 based on "Principles of Inherency" as the invention is "anticipation" by the prior art.

The prior art (Wilson) relied upon disclosed a diaper which had two snaps in front and back of the diaper in order to be worn by a baby and which may further have a strip in order to fasten the diaper to baby's body. Wilson describes that the used diaper can be easily dealt with by rolling up and fixing it with the snaps. Accordingly, the Patent Office considered that the diaper of Wilson inherently has an ability to be rolled up and fixed after use and decided that the claimed diaper is anticipated by the diaper of Wilson. The Federal Circuit; however, held that it is recognized that the constitution of the invention is inherently present in the prior art, only when it is clearly shown that the constitution of the invention is necessarily present in the prior art by external evidence. The invention can not be rejected based on "inherency" because of probability or possibility of the presence of the constitution in the prior art. Also see *Crown Operations International Ltd. V. Solutia* 24 USPQ 2d 1917 (Fed. Cir. 2002).

B. Hoffarth et al. in view of U.S. Patent 4,755,911 to Suzuki does not render obvious Claims 9, 10, 14 and 15.

Claims 9, 10, 14 and 15 were rejected under 35 USC 103(a) as being unpatentable over Hoffarth et al. in view of U.S. Patent 4,755,911 to Suzuki. Suzuki fails to overcome the above discussed deficiencies of Hoffarth with respect to rendering unpatentable the present claims.

Suzuki does not suggest an interposer comprising dielectric layers disposed about an internal electrically conductive layer as recited in these claims. Moreover, Suzuki does not relate to laminating subassemblies of the type to which the claims are directed. Instead, the layers 2, 3 and 4 in Suzuki are actually circuit boards not interposes between subassemblies. Also, Suzuki requires employing a porous, expanded polytetrafluoroethylene to bond the circuit boards together. Moreover, Suzuki requires adhesive dots to bond the PTFE, which is contrary to the objectives of the present invention.

Accordingly, even if, Suzuki were combined with Hoffarth, the present invention would still not be disclosed.

C. Hoffarth in view of U.S. Patent No. 4,788,766 to Burger, et al. does not render obvious Claim 17.

Claim 17 was rejected under 35 U.S.C. § 103 (a) as being unpatentable over Hoffarth in view of U.S. Patent No. 4,788,766 to Burger, et al. Burger, et al. was relied upon for a disclosure of laminating subassemblies employing temperatures of at least 155°C, a time of 15 minutes and a pressure of 125 psi.

Burger, et al. fail to overcome the above discussed deficiencies of Hoffarth with respect to rendering unpatentable the present invention. Therefore Claim 17 is patentable for at least those reasons as to why Claim 8 is patentable.

Conclusion

In view of the above, it is abundantly clear that the Primary Examiner erred in finally rejecting claims 8-17. Therefore, it is respectfully requested that the Board reverse the Examiner and allow claims 8-17.

In the event the Examiner deems necessary any further cooperation to further the prosecution of this application, Applicants urge the Examiner to contact the undersigned.

The Commissioner is authorized to charge any required fees to Deposit Account 22-0185.

Dated: 7-22-04

Respectfully submitted,

By _____

Burton A. Amernick
Registration No.: 24,852
CONNOLLY BOVE LODGE & HUTZ LLP
1990 M Street, N.W., Suite 800
Washington, DC 20036-3425

(202) 331-7111
(202) 293-6229 (Fax)
Attorneys for Applicant

APPENDIX – CLAIMS ON APPEAL

8. A method for fabricating a laminate circuit structure assembly which comprises: providing at least two modularized circuitized voltage plane subassemblies wherein each of the subassemblies comprise at least two signal planes having an external and internal surface disposed about an internal voltage plane; providing dielectric between the signal and voltage planes; and providing dielectric on each external surface of each signal plane; and providing a non-cured or partially cured curable dielectric composition between the subassemblies wherein the dielectric composition comprises, the same dielectric used in said subassemblies, aligning the subassemblies, and then laminating to cause bonding of the subassemblies.

9. The method of Claim 8, which further comprises: locating an interposer between the subassemblies wherein the interposer comprises dielectric layers disposed about an internal electrically conductive layer.

10. The method of Claim 9, wherein dielectric of at least one of the surfaces that is to be bonded is from said dielectric composition.

11. The method of Claim 8, wherein vias are disposed within each subassembly for providing electrical communication between signal planes and electrical connection to another subassembly.

12. The method of Claim 11, wherein the vias through the signal planes are plated with a conductive metal.

13. The method of claim 11, wherein the vias are filled with conductive adhesive.

14. The method of Claim 9, wherein the internal electricity conductive layer of the interposer is copper.

15. The method of Claim 9, wherein the interposer is about 3 to about 10 mils thick.

16. The method of Claim 8, which comprises: providing top and bottom circuit layers on top and bottom external surfaces of the assembly.

17. The method of Claim 8, wherein the laminating is carried out at about 100 to about 200°C, for about 15 minutes to about 90 minutes, and at a pressure of about 100 to about 500 psi.

OFFICIAL

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:	:	
Robert M. Japp et al.	:	
Serial No.: 09/625,135	:	Art Unit: 3729
Filed: July 25, 2000	:	Examiner: Anthony D. Tubang.
For: Composite Laminate Circuit Structure and Methods of Fabricating	:	Atty Docket: END919990082US1

APPELLANT'S SUPPLEMENTAL BRIEF

Attention: Board of Patent Appeals and Interferences
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is an appeal from the Primary Examiner's final rejection of claims 8-17 and in response to the Notification of Non-Compliance with 37 CFR 1.192(c) dated June 24, 2004.

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is the assignee of the application, International Business Machines Corporation

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellant, Appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1-17 are in the application. Claims 8-17 are finally rejected and are on appeal. Claims 1-7 are directed to a non-elected invention and have been withdrawn.

IV. STATUS OF AMENDMENTS

No amendment has been filed after final rejection.

V. SUMMARY OF INVENTION

The present invention relates to methods for fabricating laminate circuit structures, and more particularly to fabricating composite laminate circuit structures constructed from a plurality of modularized circuitized voltage plane subassemblies bonded together. The present invention provides for planar, fine line external circuit flat lines and does not require an additional adhesive sheet or glass cloth reinforcement (page 1, lines 6–14 of the specification and figure 3).

The present invention makes possible thinner laminate circuit structures, and therefore making possible higher density PCBs with fewer processing steps. The subject invention teaches new ways to form 2S1P (figure 1) and 0S1P (figure 2) components using novel methods, some of which also simplify or solve problems of how to adhere these components together into a composite, in some cases without the corresponding increase in composite thickness necessitated by the prior art (page 2, line 30 to page 3, line 2 of the specification).

The present invention improves and simplifies the process for customizing the power planes as well as opening up numerous new possibilities in methods to construct the component cores (page 3, lines 5–7 of the specification). The present invention comprises novel ways for adhering together the subassemblies (page 3, lines 8–9 of the specification, figures 4 and 5).

More particularly, claim 8 relates to a method for fabricating a laminate circuit structure assembly (page 4, lines 12– 13 of the specification and figure 3).

The method comprises providing at least two modularized circuitized voltage plane subassemblies wherein each of the subassemblies comprise at least two signal planes disposed about an internal voltage plane (page 4, lines 13–15 and page 17, lines 27-29 of the specification and figure 1).

The signal planes each have an external surface and an internal surface (page 4, lines 15–16 of the specification and figure 1).

Dielectric material is located between the signal and voltage planes (page 4, lines 16–17 and page 17, lines 27-29 of the specification and figure 1) and also on each external surface of each signal plane (page 4, line 19 and page 17, line 29 of the specification and figure 1).

An uncured or partially cured curable dielectric composition is located between the subassemblies (page 4, lines 20–21 of the specification). The dielectric composition comprises the same dielectric used in the subassemblies (page 3, lines 29–30 of the specification).

Optionally, an interposer can be located between the subassemblies wherein the interposer comprises dielectric layers that are disposed about an internal electrically conductive layer (page 4, lines 26–28 of the specification). The subassemblies are aligned and laminated to cause bonding of the subassemblies (page 4, lines 29–30 of the specification and figure 4).

Claim 9 further recites locating an interposer between the subassemblies wherein the interposer comprises dielectric layers disposed about an internal electrically conductive layer (page 4, lines 26–28 of the specification). Claim 10 further recites that the dielectric of at least one of the surfaces that is to be bonded is from said dielectric composition (page 20 and original claim 10). Claim 11 further recites that vias are disposed within each subassembly for providing electrical communication between signal planes and electrical connection to another subassembly (page 7, line 30, page 9, line 12, page 17, lines 29 and 30 and figures 1 and 3). Claim 12 further recites that the vias through the signal planes are plated with a conductive metal page 7, lines 30 and 31, page 17, lines 30 and 31 and figure 1). Claim 13 further recites that the vias are filled with conductive adhesive (page 17, lines 30 and 31 and figure 1). Claim 14 further recites that the internal electricity conductive layer of the interposer is copper (page 21, original claim 14). Claim 15 further recites that the interposer is about 3 to about 10 mils thick (page 21, original claim 15). Claim 16 further recites providing top and bottom circuit layers on top and bottom external surfaces of the assembly(page 21, original claim 16 and figure 3). Claim 17 further recites that the laminating is carried out at about 100 to about 200°C, for about 15 minutes to about 90 minutes, and at a pressure of about 100 to about 500 psi (page 17, lines 13-15, page 21, original claim 17).

VI. ISSUES

A. Has the examiner established that Claims 8, 11-13 and 16 are anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 4,868,350 to Hoffarth, et al.?

B. Has the examiner established that Claims 9, 10, 14 and 15 are obvious and therefore unpatentable under 35 USC 103(a) over Hoffarth et al. in view of U.S. Patent 4,755,911 to Suzuki?

C. Has the examiner established that Claim 17 is obvious and therefore unpatentable under 35 U.S.C. § 103 (a) over Hoffarth in view of U.S. Patent No. 4,788,766 to Burger, et al.?

VII. GROUPING OF CLAIMS

For each rejection of the claims, the involved claims stand or fall together.

VIII. ARGUMENTS

A. U.S. Patent No. 4,868,350 to Hoffarth, et al. fails to anticipate Claims 8, 11-13 and 16

Claims 8, 11-13 and 16 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,868,350 to Hoffarth, et al. (hereinafter also "Hoffarth"). Hoffarth fails to anticipate Claims 8, 11-13 and 16.

By way of background as discussed in the spercificaiton, a conventional technique of forming a laminate circuit board structures includes forming layers of dielectric material and electrically conducting material to provide multiple layers of circuits and voltage planes. Voltage planes can be either ground plane or power planes, and are sometimes collectively referred to as power planes (page 1, lines 16–20 of the specification).

Composites constructed using 2S1P building blocks offer a number of advantages over conventional construction techniques. One of these advantages is testable impedance prior to composite lamination. The impedance is also predominately controlled by the core dielectric. This is a major advantage as core layer dielectrics are not effected by the complex geometries and fill requirements that occur at composite lamination. 2S1P's built with glass cloth free materials facilitate very high circuit density by allowing very small, laser drilled holes to be made. One very important aspect of using 2S1P's to build high density composite printed circuit

boards (PCBs) is the method used to adhere the 2S1P's into a composite board(page 2, line 29–page 3, line 3 of the specification).

Prior methods of making 2S1P cores involve drilling or etching clearance holes in bare sheets, e.g., 2 oz., 1 oz. and/or .5 oz., copper and then laminating and fully curing these with conventional prepregs or coated foils to produce a core that could be circuitized forming the signal planes. Likewise, prior 0S1P's have been fabricated in similar manners. These methods are difficult to practice due to the problems associated with handling bare copper. 2S1P's can also be made by circuitizing one side of a core with the power pattern then relaminating additional prepreg or coated copper over the circuitized power pattern(page 3, lines 4–11 of the specification).

Regardless of the method used to make the 2S1P cores, they must now be stuck together using additional "sticker" materials placed between the 2S1P's and the 0S1P's. These additional sticker sheets contribute additional thickness and exacerbate all the problems associated with additional thickness (page 3, lines 12–15 of the specification).

More recently, techniques have been provided that provide a relatively inexpensive photolithographic technique of forming a composite laminate structure from individual discrete laminate structures into a composite laminate structure (page 3, lines 16–18 of the specification).

The present invention, as discussed above, provides an improved process.

Hoffarth fails to anticipate Claims 8, 11-13 and 16 since, among other things, Hoffarth does not suggest employing a dielectric composition between the sub-assemblies that is of the same material as the dielectric of the sub-assemblies. Hoffarth merely suggests employing low dielectric constant material for sub-assemblies and low dielectric material for the encapsulant binding layer, but does not disclose that such should be of the same material. The dielectric material of the subassemblies of Hoffarth is shown as sheets 12 and 12b. The other dielectric material employed in Hoffarth is that used for the encapsulant binding layer and dielectric between cores as shown in figure 4. However, neither of these dielectric materials are disclosed as necessarily being the same as the dielectric of the subassemblies as required by the present invention. Moreover, Hoffarth does not explicitly state that the encapsulant 11 should even be

the same as the material between subassemblies. In fact, the material of the sub-assemblies is preferably polytetrafluoroethylene (e.g., see Column 4, lines 10-11, Claims 10 and 15), and the encapsulant is preferably epoxy or chlorotrifluoroethylene (e.g., see Column 3, Lines 47-51; Col. 4, lines 27-30). The material mentioned for that between subassemblies is epoxy or chlorotrifluoroethylene.

Moreover, the bonding layers and dielectric of the subassemblies are selected to differ since the binding is to space the dielectric from the conductive surfaces.

Furthermore, Hoffarth does not disclose the step of providing subassemblies having dielectric on each external surface of each signal plane prior to providing a dielectric composition for the laminating as required by the present claims. Hoffarth merely shows subassemblies having signal planes 19 on the encapsulant. The subassemblies or cores are then laminated together with the material for the laminating directly contacting the signal plane.

Therefore, Hoffarth fails to anticipate the above claims. In particular, anticipation requires the disclosure, in a prior art reference, of each and every recitation as set forth in the claims. *See Titanium Metals Corp. v. Banner*, 227 USPQ 773 (Fed. Cir. 1985), *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, USPQ2d 1081 (Fed. Cir. 1986), and *Akzo N.V. v. U.S. Interntional Trade Commissioner*, 1 USPQ2d 1241 (Fed. Cir. 1986).

There must be no difference between the claimed invention and reference disclosure for an anticipation rejection under 35 U.S.C. 102. *See Scripps Clinic and Research Foundation v. Genetech, Inc.*, 18 USPQ2d 1001 (CAFC 1991) and *Studiengesellschaft Kohle GmbH v. Dart Industries*, 220 USPQ 841 (CAFC 1984).

The law is well settled that claiming of a more specific range within a more generic range and/or claiming species from a broader group of possible compounds avoids a lack of novelty rejection. The test for anticipation is whether the claims read on the prior art disclosure, not on what the reference broadly teach.

For example, see *Akzo v. U.S. International Trade Commissioner*, 1 USPQ2d 241 (Fed. Cir. 1986). In Akzo, the claims that were drawn to a process for making aramid fibers using a

98% sulfuric acid were not anticipated by a reference using a concentrated sulfuric acid solution. The disclosure of a concentrated sulfuric acid was not deemed an inherent disclosure of the more specific 98% sulfuric acid.

The court further found that no anticipation exists when one would have had to "randomly pick and choose among a number of different polyamides, a plurality of solvents and a range of inherent viscosities" to reach the claimed invention.

Also see *In re* Kollman, et al. 201 USPQ 193 (CCPA-1979) wherein the court held that the prior art generic disclosure contains "no suggestion of the required FENAC/diphenyl ether ratio."

In Rem-Cru Titanium v. Watson 112 USPQ 88 (D.D.C-1956), the prior art showed alloys having broad ranges which included the claimed ranges. However, the prior art did not explicitly disclose the more limited ranges or alloys having the characteristics of the claimed alloy, which is analogous to the present case. Accordingly, the court held the claims to be allowable. For a similar factual pattern and same holding, please see *Becket v. Coe (CA, DC 1938) 38* USPQ2d *and Tarak v Watson (*DC-DC 1954) 103 USPQ 78.

Also, see *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Ortho-Peadics, Inc.* 24 USPQ2d 1321 (Fed. Cir. 1992). Here the court held that although the claims may be subsumed in a prior art reference generalized disclosure, this is not literal identity. The reference ranges were "so broad as to be meaningless" and provided no guidelines on how to construct a product with the invention's attributes.

Furthermore, the cited references do not inherently disclose the present invention. For instance, see *In re Robertson, et al* 49 USPQ2d 1949 (1999 Fed. Cir.). In this case, Robertson filed a patent application concerning a paper diaper. The application claimed a paper diaper having (a) two fasteners so that the diaper could be worn on a baby and (b) a third fastener for rolling up and fixing the used diaper. The Patent Office rejected the invention under 35 USC 102 based on "Principles of Inherency" as the invention is "anticipation" by the prior art.

The prior art (Wilson) relied upon disclosed a diaper which had two snaps in front and back of the diaper in order to be worn by a baby and which may further have a strip in order to fasten the diaper to baby's body. Wilson describes that the used diaper can be easily dealt with by rolling up and fixing it with the snaps. Accordingly, the Patent Office considered that the diaper of Wilson inherently has an ability to be rolled up and fixed after use and decided that the claimed diaper is anticipated by the diaper of Wilson. The Federal Circuit; however, held that it is recognized that the constitution of the invention is inherently present in the prior art, only when it is clearly shown that the constitution of the invention is necessarily present in the prior art by external evidence. The invention can not be rejected based on "inherency" because of probability or possibility of the presence of the constitution in the prior art. Also see *Crown Operations International Ltd. V. Solutia* 24 USPQ 2d 1917 (Fed. Cir. 2002).

B. Hoffarth et al. in view of U.S. Patent 4,755,911 to Suzuki does not render obvious Claims 9, 10, 14 and 15.

Claims 9, 10, 14 and 15 were rejected under 35 USC 103(a) as being unpatentable over Hoffarth et al. in view of U.S. Patent 4,755,911 to Suzuki. Suzuki fails to overcome the above discussed deficiencies of Hoffarth with respect to rendering unpatentable the present claims.

Suzuki does not suggest an interposer comprising dielectric layers disposed about an internal electrically conductive layer as recited in these claims. Moreover, Suzuki does not relate to laminating subassemblies of the type to which the claims are directed. Instead, the layers 2, 3 and 4 in Suzuki are actually circuit boards not interposes between subassemblies. Also, Suzuki requires employing a porous, expanded polytetrafluoroethylene to bond the circuit boards together. Moreover, Suzuki requires adhesive dots to bond the PTFE, which is contrary to the objectives of the present invention.

Accordingly, even if, Suzuki were combined with Hoffarth, the present invention would still not be disclosed.

C. Hoffarth in view of U.S. Patent No. 4,788,766 to Burger, et al. does not render obvious Claim 17.

Claim 17 was rejected under 35 U.S.C. § 103 (a) as being unpatentable over Hoffarth in view of U.S. Patent No. 4,788,766 to Burger, et al. Burger, et al. was relied upon for a disclosure of laminating subassemblies employing temperatures of at least 155°C, a time of 15 minutes and a pressure of 125 psi.

Burger, et al. fail to overcome the above discussed deficiencies of Hoffarth with respect to rendering unpatentable the present invention. Therefore Claim 17 is patentable for at least those reasons as to why Claim 8 is patentable.

Conclusion

In view of the above, it is abundantly clear that the Primary Examiner erred in finally rejecting claims 8-17. Therefore, it is respectfully requested that the Board reverse the Examiner and allow claims 8-17.

In the event the Examiner deems necessary any further cooperation to further the prosecution of this application, Applicants urge the Examiner to contact the undersigned.

The Commissioner is authorized to charge any required fees to Deposit Account 22-0185.

Dated: 7-22-04

Respectfully submitted,

By _____

Burton A. Amernick
Registration No.: 24,852
CONNOLLY BOVE LODGE & HUTZ LLP
1990 M Street, N.W., Suite 800
Washington, DC 20036-3425

(202) 331-7111
(202) 293-6229 (Fax)
Attorneys for Applicant

APPENDIX – CLAIMS ON APPEAL

8. A method for fabricating a laminate circuit structure assembly which comprises: providing at least two modularized circuitized voltage plane subassemblies wherein each of the subassemblies comprise at least two signal planes having an external and internal surface disposed about an internal voltage plane; providing dielectric between the signal and voltage planes; and providing dielectric on each external surface of each signal plane; and providing a non-cured or partially cured curable dielectric composition between the subassemblies wherein the dielectric composition comprises, the same dielectric used in said subassemblies, aligning the subassemblies, and then laminating to cause bonding of the subassemblies.

9. The method of Claim 8, which further comprises: locating an interposer between the subassemblies wherein the interposer comprises dielectric layers disposed about an internal electrically conductive layer.

10. The method of Claim 9, wherein dielectric of at least one of the surfaces that is to be bonded is from said dielectric composition.

11. The method of Claim 8, wherein vias are disposed within each subassembly for providing electrical communication between signal planes and electrical connection to another subassembly.

12. The method of Claim 11, wherein the vias through the signal planes are plated with a conductive metal.

13. The method of claim 11, wherein the vias are filled with conductive adhesive.

14. The method of Claim 9, wherein the internal electricity conductive layer of the interposer is copper.

15. The method of Claim 9, wherein the interposer is about 3 to about 10 mils thick.

16. The method of Claim 8, which comprises: providing top and bottom circuit layers on top and bottom external surfaces of the assembly.

17. The method of Claim 8, wherein the laminating is carried out at about 100 to about 200°C, for about 15 minutes to about 90 minutes, and at a pressure of about 100 to about 500 psi.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Robert M. Japp et al.	
Serial No.: 09/625,135	Art Unit: 3729
Filed: July 25, 2000	Examiner: Anthony D. Tubang
For: Composite Laminate Circuit Structure and Methods of Fabricating	Atty Docket: END919990082US1

APPELLANT'S SUPPLEMENTAL BRIEF

Attention: Board of Patent Appeals and Interferences
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is an appeal from the Primary Examiner's final rejection of claims 8-17 and in response to the Notification of Non-Compliance with 37 CFR 1.192(c) dated June 24, 2004.

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is the assignee of the application, International Business Machines Corporation

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellant, Appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1-17 are in the application. Claims 8-17 are finally rejected and are on appeal. Claims 1-7 are directed to a non-elected invention and have been withdrawn.

IV. STATUS OF AMENDMENTS

No amendment has been filed after final rejection.

V. SUMMARY OF INVENTION

The present invention relates to methods for fabricating laminate circuit structures, and more particularly to fabricating composite laminate circuit structures constructed from a plurality of modularized circuitized voltage plane subassemblies bonded together. The present invention provides for planar, fine line external circuit flat lines and does not require an additional adhesive sheet or glass cloth reinforcement (page 1, lines 6–14 of the specification and figure 3).

The present invention makes possible thinner laminate circuit structures, and therefore making possible higher density PCBs with fewer processing steps. The subject invention teaches new ways to form 2S1P (figure 1) and 0S1P (figure 2) components using novel methods, some of which also simplify or solve problems of how to adhere these components together into a composite, in some cases without the corresponding increase in composite thickness necessitated by the prior art (page 2, line 30 to page 3, line 2 of the specification).

The present invention improves and simplifies the process for customizing the power planes as well as opening up numerous new possibilities in methods to construct the component cores (page 3, lines 5–7 of the specification). The present invention comprises novel ways for adhering together the subassemblies (page 3, lines 8–9 of the specification, figures 4 and 5).

More particularly, claim 8 relates to a method for fabricating a laminate circuit structure assembly (page 4, lines 12– 13 of the specification and figure 3).

The method comprises providing at least two modularized circuitized voltage plane subassemblies wherein each of the subassemblies comprise at least two signal planes disposed about an internal voltage plane (page 4, lines 13–15 and page 17, lines 27-29 of the specification and figure 1).

The signal planes each have an external surface and an internal surface (page 4, lines 15–16 of the specification and figure 1).

Dielectric material is located between the signal and voltage planes (page 4, lines 16–17 and page 17, lines 27-29 of the specification and figure 1) and also on each external surface of each signal plane (page 4, line 19 and page 17, line 29 of the specification and figure 1).

An uncured or partially cured curable dielectric composition is located between the subassemblies (page 4, lines 20–21 of the specification). The dielectric composition comprises the same dielectric used in the subassemblies (page 3, lines 29–30 of the specification).

Optionally, an interposer can be located between the subassemblies wherein the interposer comprises dielectric layers that are disposed about an internal electrically conductive layer (page 4, lines 26–28 of the specification). The subassemblies are aligned and laminated to cause bonding of the subassemblies (page 4, lines 29–30 of the specification and figure 4).

Claim 9 further recites locating an interposer between the subassemblies wherein the interposer comprises dielectric layers disposed about an internal electrically conductive layer (page 4, lines 26–28 of the specification). Claim 10 further recites that the dielectric of at least one of the surfaces that is to be bonded is from said dielectric composition (page 20 and original claim 10). Claim 11 further recites that vias are disposed within each subassembly for providing electrical communication between signal planes and electrical connection to another subassembly (page 7, line 30, page 9, line 12, page 17, lines 29 and 30 and figures 1 and 3). Claim 12 further recites that the vias through the signal planes are plated with a conductive metal page 7, lines 30 and 31, page 17, lines 30 and 31 and figure 1). Claim 13 further recites that the vias are filled with conductive adhesive (page 17, lines 30 and 31 and figure 1). Claim 14 further recites that the internal electricity conductive layer of the interposer is copper (page 21, original claim 14). Claim 15 further recites that the interposer is about 3 to about 10 mils thick (page 21, original claim 15). Claim 16 further recites providing top and bottom circuit layers on top and bottom external surfaces of the assembly(page 21, original claim 16 and figure 3). Claim 17 further recites that the laminating is carried out at about 100 to about 200°C, for about 15 minutes to about 90 minutes, and at a pressure of about 100 to about 500 psi (page 17, lines 13-15, page 21, original claim 17).

VI. ISSUES

A. Has the examiner established that Claims 8, 11-13 and 16 are anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 4,868,350 to Hoffarth, et al.?

B. Has the examiner established that Claims 9, 10, 14 and 15 are obvious and therefore unpatentable under 35 USC 103(a) over Hoffarth et al. in view of U.S. Patent 4,755,911 to Suzuki?

C. Has the examiner established that Claim 17 is obvious and therefore unpatentable under 35 U.S.C. § 103 (a) over Hoffarth in view of U.S. Patent No. 4,788,766 to Burger, et al.?

VII. GROUPING OF CLAIMS

For each rejection of the claims, the involved claims stand or fall together.

VIII. ARGUMENTS

A. U.S. Patent No. 4,868,350 to Hoffarth, et al. fails to anticipate Claims 8, 11-13 and 16

Claims 8, 11-13 and 16 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,868,350 to Hoffarth, et al. (hereinafter also "Hoffarth"). Hoffarth fails to anticipate Claims 8, 11-13 and 16.

By way of background as discussed in the spercificaiton, a conventional technique of forming a laminate circuit board structures includes forming layers of dielectric material and electrically conducting material to provide multiple layers of circuits and voltage planes. Voltage planes can be either ground plane or power planes, and are sometimes collectively referred to as power planes (page 1, lines 16–20 of the specification).

Composites constructed using 2S1P building blocks offer a number of advantages over conventional construction techniques. One of these advantages is testable impedance prior to composite lamination. The impedance is also predominately controlled by the core dielectric. This is a major advantage as core layer dielectrics are not effected by the complex geometries and fill requirements that occur at composite lamination. 2S1P's built with glass cloth free materials facilitate very high circuit density by allowing very small, laser drilled holes to be made. One very important aspect of using 2S1P's to build high density composite printed circuit

boards (PCBs) is the method used to adhere the 2S1P's into a composite board(page 2, line 29–page 3, line 3 of the specification).

Prior methods of making 2S1P cores involve drilling or etching clearance holes in bare sheets, e.g., 2 oz., 1 oz. and/or .5 oz., copper and then laminating and fully curing these with conventional prepregs or coated foils to produce a core that could be circuitized forming the signal planes. Likewise, prior 0S1P's have been fabricated in similar manners. These methods are difficult to practice due to the problems associated with handling bare copper. 2S1P's can also be made by circuitizing one side of a core with the power pattern then relaminating additional prepreg or coated copper over the circuitized power pattern(page 3, lines 4–11 of the specification).

Regardless of the method used to make the 2S1P cores, they must now be stuck together using additional "sticker" materials placed between the 2S1P's and the 0S1P's. These additional sticker sheets contribute additional thickness and exacerbate all the problems associated with additional thickness (page 3, lines 12–15 of the specification).

More recently, techniques have been provided that provide a relatively inexpensive photolithographic technique of forming a composite laminate structure from individual discrete laminate structures into a composite laminate structure (page 3, lines 16–18 of the specification).

The present invention, as discussed above, provides an improved process.

Hoffarth fails to anticipate Claims 8, 11-13 and 16 since, among other things, Hoffarth does not suggest employing a dielectric composition between the sub-assemblies that is of the same material as the dielectric of the sub-assemblies. Hoffarth merely suggests employing low dielectric constant material for sub-assemblies and low dielectric material for the encapsulant binding layer, but does not disclose that such should be of the same material. The dielectric material of the subassemblies of Hoffarth is shown as sheets 12 and 12b. The other dielectric material employed in Hoffarth is that used for the encapsulant binding layer and dielectric between cores as shown in figure 4. However, neither of these dielectric materials are disclosed as necessarily being the same as the dielectric of the subassemblies as required by the present invention. Moreover, Hoffarth does not explicitly state that the encapsulant 11 should even be

the same as the material between subassemblies. In fact, the material of the sub-assemblies is preferably polytetrafluoroethylene (e.g., see Column 4, lines 10-11, Claims 10 and 15), and the encapsulant is preferably epoxy or chlorotrifluoroethylene (e.g., see Column 3, Lines 47-51; Col. 4, lines 27-30). The material mentioned for that between subassemblies is epoxy or chlorotrifluoroethylene.

Moreover, the bonding layers and dielectric of the subassemblies are selected to differ since the binding is to space the dielectric from the conductive surfaces.

Furthermore, Hoffarth does not disclose the step of providing subassemblies having dielectric on each external surface of each signal plane prior to providing a dielectric composition for the laminating as required by the present claims. Hoffarth merely shows subassemblies having signal planes 19 on the encapsulant. The subassemblies or cores are then laminated together with the material for the laminating directly contacting the signal plane.

Therefore, Hoffarth fails to anticipate the above claims. In particular, anticipation requires the disclosure, in a prior art reference, of each and every recitation as set forth in the claims. *See Titanium Metals Corp. v. Banner*, 227 USPQ 773 (Fed. Cir. 1985), *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, USPQ2d 1081 (Fed. Cir. 1986), and *Akzo N.V. v. U.S. Interntional Trade Commissioner*, 1 USPQ2d 1241 (Fed. Cir. 1986).

There must be no difference between the claimed invention and reference disclosure for an anticipation rejection under 35 U.S.C. 102. *See Scripps Clinic and Research Foundation v. Genetech, Inc.*, 18 USPQ2d 1001 (CAFC 1991) and *Studiengesellschaft Kohle GmbH v. Dart Industries*, 220 USPQ 841 (CAFC 1984).

The law is well settled that claiming of a more specific range within a more generic range and/or claiming species from a broader group of possible compounds avoids a lack of novelty rejection. The test for anticipation is whether the claims read on the prior art disclosure, not on what the reference broadly teach.

For example, see *Akzo v. U.S. International Trade Commissioner*, 1 USPQ2d 241 (Fed. Cir. 1986). In Akzo, the claims that were drawn to a process for making aramid fibers using a

98% sulfuric acid were not anticipated by a reference using a concentrated sulfuric acid solution. The disclosure of a concentrated sulfuric acid was not deemed an inherent disclosure of the more specific 98% sulfuric acid.

The court further found that no anticipation exists when one would have had to "randomly pick and choose among a number of different polyamides, a plurality of solvents and a range of inherent viscosities" to reach the claimed invention.

Also see *In re* Kollman, et al. 201 USPQ 193 (CCPA-1979) wherein the court held that the prior art generic disclosure contains "no suggestion of the required FENAC/diphenyl ether ratio."

In Rem-Cru Titanium v. Watson 112 USPQ 88 (D.D.C-1956), the prior art showed alloys having broad ranges which included the claimed ranges. However, the prior art did not explicitly disclose the more limited ranges or alloys having the characteristics of the claimed alloy, which is analogous to the present case. Accordingly, the court held the claims to be allowable. For a similar factual pattern and same holding, please see *Becket v. Coe (CA, DC 1938) 38* USPQ2d *and Tarak v Watson (*DC-DC 1954) 103 USPQ 78.

Also, see *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Ortho-Peadics, Inc.* 24 USPQ2d 1321 (Fed. Cir. 1992). Here the court held that although the claims may be subsumed in a prior art reference generalized disclosure, this is not literal identity. The reference ranges were "so broad as to be meaningless" and provided no guidelines on how to construct a product with the invention's attributes.

Furthermore, the cited references do not inherently disclose the present invention. For instance, see *In re Robertson, et al* 49 USPQ2d 1949 (1999 Fed. Cir.). In this case, Robertson filed a patent application concerning a paper diaper. The application claimed a paper diaper having (a) two fasteners so that the diaper could be worn on a baby and (b) a third fastener for rolling up and fixing the used diaper. The Patent Office rejected the invention under 35 USC 102 based on "Principles of Inherency" as the invention is "anticipation" by the prior art.

The prior art (Wilson) relied upon disclosed a diaper which had two snaps in front and back of the diaper in order to be worn by a baby and which may further have a strip in order to fasten the diaper to baby's body. Wilson describes that the used diaper can be easily dealt with by rolling up and fixing it with the snaps. Accordingly, the Patent Office considered that the diaper of Wilson inherently has an ability to be rolled up and fixed after use and decided that the claimed diaper is anticipated by the diaper of Wilson. The Federal Circuit; however, held that it is recognized that the constitution of the invention is inherently present in the prior art, only when it is clearly shown that the constitution of the invention is necessarily present in the prior art by external evidence. The invention can not be rejected based on "inherency" because of probability or possibility of the presence of the constitution in the prior art. Also see *Crown Operations International Ltd. V. Solutia* 24 USPQ 2d 1917 (Fed. Cir. 2002).

B. Hoffarth et al. in view of U.S. Patent 4,755,911 to Suzuki does not render obvious Claims 9, 10, 14 and 15.

Claims 9, 10, 14 and 15 were rejected under 35 USC 103(a) as being unpatentable over Hoffarth et al. in view of U.S. Patent 4,755,911 to Suzuki. Suzuki fails to overcome the above discussed deficiencies of Hoffarth with respect to rendering unpatentable the present claims.

Suzuki does not suggest an interposer comprising dielectric layers disposed about an internal electrically conductive layer as recited in these claims. Moreover, Suzuki does not relate to laminating subassemblies of the type to which the claims are directed. Instead, the layers 2, 3 and 4 in Suzuki are actually circuit boards not interposes between subassemblies. Also, Suzuki requires employing a porous, expanded polytetrafluoroethylene to bond the circuit boards together. Moreover, Suzuki requires adhesive dots to bond the PTFE, which is contrary to the objectives of the present invention.

Accordingly, even if, Suzuki were combined with Hoffarth, the present invention would still not be disclosed.

C. Hoffarth in view of U.S. Patent No. 4,788,766 to Burger, et al. does not render obvious Claim 17.

Claim 17 was rejected under 35 U.S.C. § 103 (a) as being unpatentable over Hoffarth in view of U.S. Patent No. 4,788,766 to Burger, et al. Burger, et al. was relied upon for a disclosure of laminating subassemblies employing temperatures of at least 155°C, a time of 15 minutes and a pressure of 125 psi.

Burger, et al. fail to overcome the above discussed deficiencies of Hoffarth with respect to rendering unpatentable the present invention. Therefore Claim 17 is patentable for at least those reasons as to why Claim 8 is patentable.

Conclusion

In view of the above, it is abundantly clear that the Primary Examiner erred in finally rejecting claims 8-17. Therefore, it is respectfully requested that the Board reverse the Examiner and allow claims 8-17.

In the event the Examiner deems necessary any further cooperation to further the prosecution of this application, Applicants urge the Examiner to contact the undersigned.

The Commissioner is authorized to charge any required fees to Deposit Account 22-0185.

Dated: 7-22-04

Respectfully submitted,

By _____

Burton A. Amernick
Registration No.: 24,852
CONNOLLY BOVE LODGE & HUTZ LLP
1990 M Street, N.W., Suite 800
Washington, DC 20036-3425

(202) 331-7111
(202) 293-6229 (Fax)
Attorneys for Applicant

APPENDIX – CLAIMS ON APPEAL

8. A method for fabricating a laminate circuit structure assembly which comprises: providing at least two modularized circuitized voltage plane subassemblies wherein each of the subassemblies comprise at least two signal planes having an external and internal surface disposed about an internal voltage plane; providing dielectric between the signal and voltage planes; and providing dielectric on each external surface of each signal plane; and providing a non-cured or partially cured curable dielectric composition between the subassemblies wherein the dielectric composition comprises, the same dielectric used in said subassemblies, aligning the subassemblies, and then laminating to cause bonding of the subassemblies.

9. The method of Claim 8, which further comprises: locating an interposer between the subassemblies wherein the interposer comprises dielectric layers disposed about an internal electrically conductive layer.

10. The method of Claim 9, wherein dielectric of at least one of the surfaces that is to be bonded is from said dielectric composition.

11. The method of Claim 8, wherein vias are disposed within each subassembly for providing electrical communication between signal planes and electrical connection to another subassembly.

12. The method of Claim 11, wherein the vias through the signal planes are plated with a conductive metal.

13. The method of claim 11, wherein the vias are filled with conductive adhesive.

14. The method of Claim 9, wherein the internal electricity conductive layer of the interposer is copper.

15. The method of Claim 9, wherein the interposer is about 3 to about 10 mils thick.

16. The method of Claim 8, which comprises: providing top and bottom circuit layers on top and bottom external surfaces of the assembly.

17. The method of Claim 8, wherein the laminating is carried out at about 100 to about 200°C, for about 15 minutes to about 90 minutes, and at a pressure of about 100 to about 500 psi.